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(54) **HIGH NITROGEN STAINLESS STEEL**

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(58) **Field of Search** 420/57, 59; 75/244, 75/246; 419/13, 49, 46

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(57) **ABSTRACT**

Disclosed is a high nitrogen stainless steel alloy and alloy powder comprising chromium (Cr), molybdenum (Mo), manganese (Mn), nickel (Ni), nitrogen (N) and iron (Fe). The composition of the stainless steel alloy and powder comprises between about 27 and about 30% by weight Cr, between about 1.5 and about 4.0% by weight Mo, Mn present and is present in an amount up to 15% by weight, at least about 8% by weight Ni, and about 0.8 to about 0.97% by weight N with the balance being iron. It has been discovered that forming an alloy of this chemistry using nitrogen gas atomization process, followed by a consolidation process, the alloy is less likely to form detrimental ferrite, stable nitride and sigma (σ) phases, without the need for further processing, such as solution treating and quenching. This allows for the formation of stainless steel articles having a thicker cross-section with reduced processing cost.

24 Claims, 6 Drawing Sheets